(BPF) of the respective stage and an upper cut-off limit for mode k=−2 of the blade-passing frequency (BPF) of the respective stage.

It is also possible to determine the vane-to-blade ratio for the upstream stages in such a way that, for the upstream stages, it is between a lower cut-off limit for mode k=−1 of the double blade-passing frequency (2BPF) and an upper cut-off limit for mode k=−2 of the double blade-passing frequency (2BPF), while the vane-to-blade ratio for the downstream stages is between a lower cut-off limit for mode k=−1 of the blade-passing frequency (BPF) and an upper cut-off limit for mode k=−2 of the blade-passing frequency (BPF). Also proper dampening of the sound propagation and thus a noise minimization of the low-pressure turbine is possible in low-pressure turbines designed in this way.

What is claimed is:

1. A turbine, comprising:

a plurality of stages positioned axially one behind the other in the flow direction of the turbine, each stage being formed by a stationary guide vane ring having multiple guide vanes and a rotating blade ring having multiple rotating blades, and each stage having a vane-to-blade ratio characteristic quantity indicating a number of guide vanes to the number of rotating blades ratio within a stage;

at least one stage of the plurality of stages of the turbine being designed so that under noise-critical operating conditions of the turbine, the vane-to-blade ratio characteristic quantity of the one stage is between a lower cut-off limit for the mode k=−1 of the blade-passing frequency of the one stage and an upper cut-off limit for the mode k=−2 of the blade-passing frequency of the one stage.

2. The turbine as recited in claim **1**, wherein the one stage is an upstream stage.

3. The turbine as recited in claim **2**, wherein the upstream stage has a vane-to-blade ratio characteristic quantity of between 0.6 and 0.8.

4. The turbine as recited in claim **3**, wherein the vane-to-blade ratio characteristic quantity of the upstream stage is 0.7.

5. The turbine as recited in claim **1**, wherein a further stage of the turbine is designed in such a way that its vane-to-blade ratio characteristic quantity is between a lower cut-off limit for the mode k=−1 of the double blade-passing frequency of the further stage and an upper cut-off limit for the mode k=−2 of the double blade-passing frequency of the further stage under noise-critical operating conditions of the turbine.

6. The turbine as recited in claim **5**, wherein the further stage is a downstream stage.

7. The turbine as recited in claim **6**, wherein a vane-to-blade ratio characteristic quantity of the downstream stage is between 1.3 and 1.5.

8. The turbine as recited in claim **7**, wherein the vane-to-blade ratio characteristic quantity of the downstream stage is 1.4.

9. The turbine as recited in claim **6**, wherein the upstream stages of the turbine positioned in the flow direction are designed in such a way that the vane-to-blade ratio characteristic quantities of the upstream stages are between 0.6 and 0.8, and the downstream stages of the turbine positioned in the flow direction are designed in such a way that the vane-to-blade ratio characteristic quantities of the downstream stages are between 1.3 and 1.5.

10. The turbine as recited in claim **9**, wherein the vane-to-blade ratio characteristic quantities of the upstream stages are 0.7 and the vane-to-blade ratio characteristic quantities of the downstream stages are 1.4.

11. The turbine as recited in claim **1**, wherein the upstream stages of the turbine positioned in the flow direction are designed in such a way that under noise-critical operating conditions of the turbine their vane-to-blade ratio characteristic quantity is between the lower cut-off limit for the mode k=−1 of the blade-passing frequency and the upper cut-off limit for the mode k=−2 of the blade-passing frequency and the downstream stages of the turbine positioned in the flow direction are designed in such a way that under noise-critical operating conditions of the turbine the vane-to-blade ratio characteristic quantity is between a lower cut-off limit for the mode k=−1 of the double blade-passing frequency and an upper cut-off limit for the mode k=−2 of the double blade-passing frequency.

12. The turbine as recited in claim **1**, wherein the turbine is a low pressure turbine of a gas turbine.

13. The turbine as recited in claim **12**, wherein the turbine is a turbine of an aircraft engine.

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